

REMARKS

Claims 1-21 are pending in the case. In the initial office action the examiner rejected claims 1-18 under 35 U.S.C. 103(a) as unpatentable over Edamura, et al in view of Turner. Claims 19-21 were indicated as allowable if rewritten in independent form.

The invention as claimed differs substantially from the prior art and, even if the references are combined, they do not disclose the invention. Applicant asks the examiner to consider the following reasons that the claims are allowable. Applicant will give a summary review of the invention, describe the prior art and then describe the differences from the prior art which form the basis for patentability.

The Invention

As described in more detail in the specification, the invention is directed to a microcontroller, computer-based control system for controlling a cooking appliance having multiple cooking zones. More specifically, the cooking appliance is a grill having multiple zones for cooking and multiple zones for holding cooked food products. The control system includes sensors that input sensed information to the computer, displays for signaling information to an operator and switches to permit an operator to manually input information to the computer.

Grills with multiple cooking zones are known in the prior art. Computer control systems for cooking appliances are known in the prior art. The prior art also shows numerous computer control systems with sensors, displays and input switches for

controlling cooking appliances. But those which applicant's undersigned attorney has seen have input switches for presetting the cooking mode and time, displays for showing input information or signaling that a cooking operation is completed and the switches and displays are centrally collected at a control panel. Much of the prior art is for microwave ovens which have one cooking zone. The operator selects the cooking parameters, inserts the food in the one zone and lets the control system automatically cook the food until cooking is completed and signaled to the operator.

However, as explained in the specification, applicant's invention deals with a grill not only having multiple cooking zones, but a grill on which the food workpieces must undergo multiple manual manipulations during the food preparation process on the grill. The food workpieces are turned over, moved from one zone to another or moved off the grill at the end of specified time intervals. Applicant's control system is directed not merely to control of the cooking appliance, but very importantly to control of the manual operations performed by an operator. The manual operations controlled by the computer are turning the food workpiece on the grill, moving the work pieces from one zone to another, such as from a cooking zone to a holding zone, and removal of food workpieces from the grill after a time limit is reached. This is done by visually signaling the need for performance of a manual operation and, very importantly, signaling that need at a display that is physically associated with the zone where the manual operation needs to be performed (i.e. next to it). Applicant's invention also combines that with a manually operable switch, for confirming that the manual operation has been performed. Importantly, that switch is also physically associated with the zone (i.e. next to it). Each

of the multiple zones have both such a display and such a switch. Applicant's system accommodates the need to make the control system as uncomplicated, easy and reliable as possible for a human operator to use in order to minimize the possibility of human error. Human error is minimized because the location of the display next to its zone (rather than at a central control panel) clearly tells the operator which zone needs the manual operation signaled by the display. Because the confirmation switch is also located there next to the zone, the operator can easily find and operate the correct confirmation switch.

The new structural features that combine with the other structures to make applicant's invention patentable are:

1. each zone has a display *in physical association* with its zone for signaling a condition of its associated zone and for signaling a manual operation needed at its zone; and
2. each zone has a manual input switch *in physical association* with its zone for signaling to the computer a confirmation that a manual operation signaled by a display has been performed.

These displays and switches are, of course, connected to a computer control system, along with sensors at each zone, including temperature sensors. They are also referred to in the specification as switch-display pairs and are discussed principally in paragraphs [0026]-[0038] of the specification. A different switch-display pair is physically associated with each of several zones. As apparent from the specification, "in physical association with a zone" means that these switch-display pairs are mounted on

the grill next to the zone they relate to rather than all being collected together at a central control panel. The result is that, when a manual operation is to be performed, the control system can signal the need to perform it on a display right next to the zone to which the signal applies. The operator does not have to look at a control panel and then figure out which zone the signal applies to. This also means that, after the operator has performed the manual operation, the operator can tell the computer that it has been performed by actuating the input switch right next to the zone where the manual operation was performed, rather than stepping up to a control panel and looking for the appropriate switch to actuate. This signaling of the manual operation to be performed combined with the physical placement of the switch-display pairs next to each cooking zone greatly reduces or eliminates human error and also reduces the time needed to confirm the performance of a manual operation.

These features allow an enhanced operational method that improves both the ease and reliability that of the cooking process for a human operator. The control system stores the times for various cooking or heating operations after which manual operations need to be performed. The control system then signals the need for each manual operation at the zone location where the manual operation is to be performed. After the operation is performed, the operator manually inputs a confirmation by a switch at the zone where the operation was performed. This greatly reduces the likelihood that a signaled operation will be performed at the wrong zone or a confirmation will be input for the wrong zone.

The Prior Art

One cited prior art reference, Edamura, et al., shows computer control of a cooking process in a microwave oven. The other cited reference shows computer control of a grill. This prior art does show displays capable of displaying indicia and key switches for operator input. But in the prior art, all the displays and all the switches are collected together in a side-by-side array on an operating panel. Additionally, the prior art does not show displays for signaling a manual operation to be performed on the food workpieces and does not show switches for confirming that the manual operation has been performed. Applicant now turns in more detail to the cited references.

Edamura, et al.

Edamura describes several prior art microwave cooking appliances as well as his invention. All have a single cooking zone, but have different cooking modes, for example microwave cooking and grill cooking. They all have a single location for their keys and signals - a keypad and display. In the invention of Edamura these are the "control unit 51" of Fig. 1, 3 and 5. One prior art microwave described in this patent has a single operating panel 1 shown in Fig. 7 and in detail in Fig. 8. Figs. 10 and 11 show another and Figs. 14 and 16 yet another. These displays signal or prompt an operator for choices to make to select a cooking operation and have keys for the operator to press to preselect and initiate his choice for the operation, i.e. the operator selects from a menu of selections. In all of these the operator is selecting how the microwave oven will operate.

The food workpiece just sits there in the microwave and is cooked under control of the control system in accordance with the preselections made by the operator. None of these signal the need for a manual operation on the food workpiece and none of the switches provide a manual input signaling to the computer that the manual operation has been performed.

Figs. 6 (a) - (g) of Edamura "show a flow chart of the menu selection process" (col. 13, line 57). There are options for canceling or changing menu selections. There is no opportunity to confirm a manual operation on the food workpiece. There is no signaling that a manual operation needs to be performed. The only confirmation by the operator is to confirm that the preselected menu options are correct.

Turner

Turner has a single control panel illustrated in Fig. 5. Turner does have multiple heating (cooking) zones that can be preset to different temperatures. A controller regulates the temperatures. The operator can preset the temperature, cooking time and cooking pressure. Turner has no signaling that a zone needs a manual operation on the food and more importantly, has no display physically associated with each zone to signal the need for the manual operation. Turner has no switches to confirm that a manual operation has been performed and, more importantly, has no confirmation switches physically associated with each zone.

Distinctions From the Prior Art

Completely absent from the prior art is the concept of tracking, during the food preparation process, a series of manual operations on the food workpieces that are located at multiple zones. The prior art doesn't talk about manual manipulations such as moving the food from one zone to another zone, or away from the grill, or performing a manual operation within a zone (e.g. turning over a hamburger) with each such manual operation being signaled and performed after a stored time interval. The prior art just presets the cooking conditions. See, for example, Turner, col. 5, lines 57-65.

Consequently, the principal features of applicant's invention are not shown in the prior art. The prior art does not show a computer controlled cooking system having a plurality of cooking zones, a plurality of sensors, displays and input switches pairs, with a different display and input switch in physical association with each zone. The prior art is what the invention seeks to avoid: input switches and display signals collected together at a control panel causing the problems described in the application (paragraphs [0008]-[0010]).

The advantageous new result is that applicant's invention controls multiple, sequential food preparation operations or steps, most importantly including manual operations or steps on the food workpieces. A computer keeps track of the food workpieces as they go along from zone to zone. Applicant's system allows human interaction during the series of food preparation steps, not just a preset of the cooking parameters. The invention permits multiple zones to be used for the same operation, such as cooking (three are disclosed in the preferred embodiment) but cooking can be initiated

at different times at each zone. As a result, the times to manually move the cooking workpieces to a holding zone will be different when cooking begins at different times. The invention allows the manual operation of moving the workpieces to be signaled at different times for the different zones. The same is true for turning or removing the food workpieces. With applicant's invention, each zone is separately controlled, each zone has a separate display physically associated with it to tell the operator the status for that zone, and to tell the operator when something needs to be done at that zone. The display for each zone signals what is to be done at that zone. The location of the display next to the zone tells where the manual operation is to be done. With the invention, after the operator has performed the manual operation, he or she confirms that performance by a switch next to the zone. That eliminates the need to find the switch that is related to that zone from among several such switches for several zones located on the same central panel.

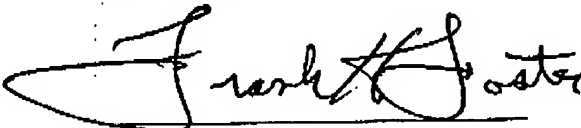
In summary, the prior art does not show the combination of a computer cooking control system for a cooking appliance have a plurality of heated zones, with each zone having a display *in physical association* with its zone for signaling a condition of its associated zone and for signaling a manual operation needed at its zone and each zone also having a manual input switch *in physical association* with its zone for manually signaling to the computer a confirmation that a manual operation signaled by a display has been performed. Therefore, reconsideration and allowance are respectfully requested.

The examiner is authorized to communicate with the undersigned attorney by email by the following recommended authorization language: Recognizing that Internet

communications are not secure, I hereby authorize the USPTO to communicate with me concerning any subject matter of this application by electronic mail. I understand that a copy of these communications will be made of record in the application file.
(Authorization pursuant to MPEP 502.03)

The Commissioner is authorized to charge Deposit Account No. 13-3393 for any insufficient fees under 37 CFR §§ 1.16 or 1.17, or credit any overpayment of fees.

Respectfully submitted,

10/24/05 
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